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SPECIFICATION FOR BRUSHES, HORSE

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SPECIFICATION FOR BRUSHES, HORSE

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Indian Standard

SPECIFICATION FOR BRUSHES, HORSE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 3 October 1979, after the draft finalized by the Brushware Sectional Committee had been approved by the Chemical Division Council.

0.2 The formulation of this specification was taken up by the concerned technical committee on a specific request received from the Ministry of Defence, Government of India who are one of the major users of such brushes.

0.3 Full alignment of IND/GS 1003 (a), Brushes, Horse issued by Ministry of Defence, Government of India has been achieved with this Indian Standard as it fully covers the requirements prescribed in IND/GS 1003 (a).

0.4 This standard contains clause **7.1** which calls for agreement between the purchaser and the supplier.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for brushes, horse.

2. TERMINOLOGY

2.1 For the purpose of this standard, definitions given in IS : 707-1976† and IS : 5060-1969‡ shall apply.

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*Rules for rounding off numerical values (*revised*).

†Glossary of terms applicable to timber and timber technology and utilisation (*second revision*).

‡Glossary of terms used in brushware industry.

2.2 Approved Sample — The sample accepted by the indentor or inspection authority as basis for supply. When a sample is tested and approved by the purchaser or an inspection authority, the results of such tests as will permit the supplier to meet the limits imposed by the specification for deliveries, shall be made available to the supplier.

3. TYPES

3.1 Depending on the filling materials used, horse brushes shall be of the following two types:

Type	*Filling Material*
1	Nylon monofilaments
2	Bristles

4. REQUIREMENTS

4.1 Materials — The brushes shall be manufactured from the following materials.

4.1.1 *Filling Material*

4.1.1.1 *For type 1* — White nylon monofilaments of 0·35 mm diameter (*see* Type 3 of IS : 1843-1963*) shall be used.

4.1.1.2 *For type 2* — Black or grey, general quality, stiff or semistiff type bristles (*see* IS : 1844-1975†) shall be used. They shall be clean, free from dust and other extraneous matter. They shall be close match to those used in the approved sample.

4.1.2 *Timber*

4.1.2.1 Any of the timber species listed in Appendix A shall be used in the manufacture of wooden portion of the brush.

4.1.2.2 The timber shall be reasonably straight grained and well seasoned to a moisture content not exceeding 15 percent when tested by electronic moisture meter method. In case of dispute, the oven drying method shall be used (*see* Appendix B).

4.1.2.3 The timber shall be free from brashness, any kind of biological or non-biological deterioration, insect attack, centre heart (pith), knots (except live pin knots), cracks, warps and any other defect which may reduce the life of the brush or affect its utility.

4.1.3 *Wire* — Galvanized iron wire of 0·45 ± 0·05 mm diameter shall be used for wire-drawn brushes.

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*Specification for nylon monofilaments.

†Specification for bristles (*first revision*).

4.1.4 *Staples* — Bright iron or galvanized mild steel wire of 0·90 ± 0·10 mm diameter shall be used for staple set brushes.

4.1.5 *Nail* — Brass or galvanized iron nails of 1·4 ± 0·20 mm diameter and 10 mm long shall be used.

4.1.6 *Screws* — Screws wood slotted OSK head mild steel No. 4 and 15 mm long (*see* IS : 6760-1972*) shall be used.

4.1.7 *Loop* — Web cotton, 51 mm, undyed (*see* IS : 6488-1975†) shall be used.

4.1.8 *Strip* — Leather, buffallo, curried 2 mm thick [*See* IS : 579 (Part II)-1973‡] shall be used.

4.1.9 *Glue* — Animal glue (*see* Grade 3 of IS : 852-1969§) shall be used.

4.2 Manufacture

4.2.1 The brush shall conform to the shape and design as shown in Fig. 1.

4.2.2 The board shall be drilled with 320 holes of shape and size in the manner as shown in Fig. 1.

4.2.3 *For Wire Drawn Brushes* — The tufts of filling material shall be firmly drawn into the entering holes by means of galvanized iron wire and thoroughly bottomed so that they cannot be knocked back. The back shall be securely glued to the board and then reinforced with the required number of nails.

4.2.4 *For Staple Set Brushes* — No back is required. The board shall be drilled with holes of the sizes and in the the manner as shown in Fig. 1. The tufts of the filling material shall be firmly slogged into the knot holes by machine and cross-stapled so that they cannot be easily withdrawn.

4.2.5 The filling material shall be trimmed straight faced to give the shape as shown in Fig. 1.

4.2.6 The loop shall be made to size and shall be correctly positioned with the leather strip and firmly secured to the board by means of screws as shown in Fig. 1.

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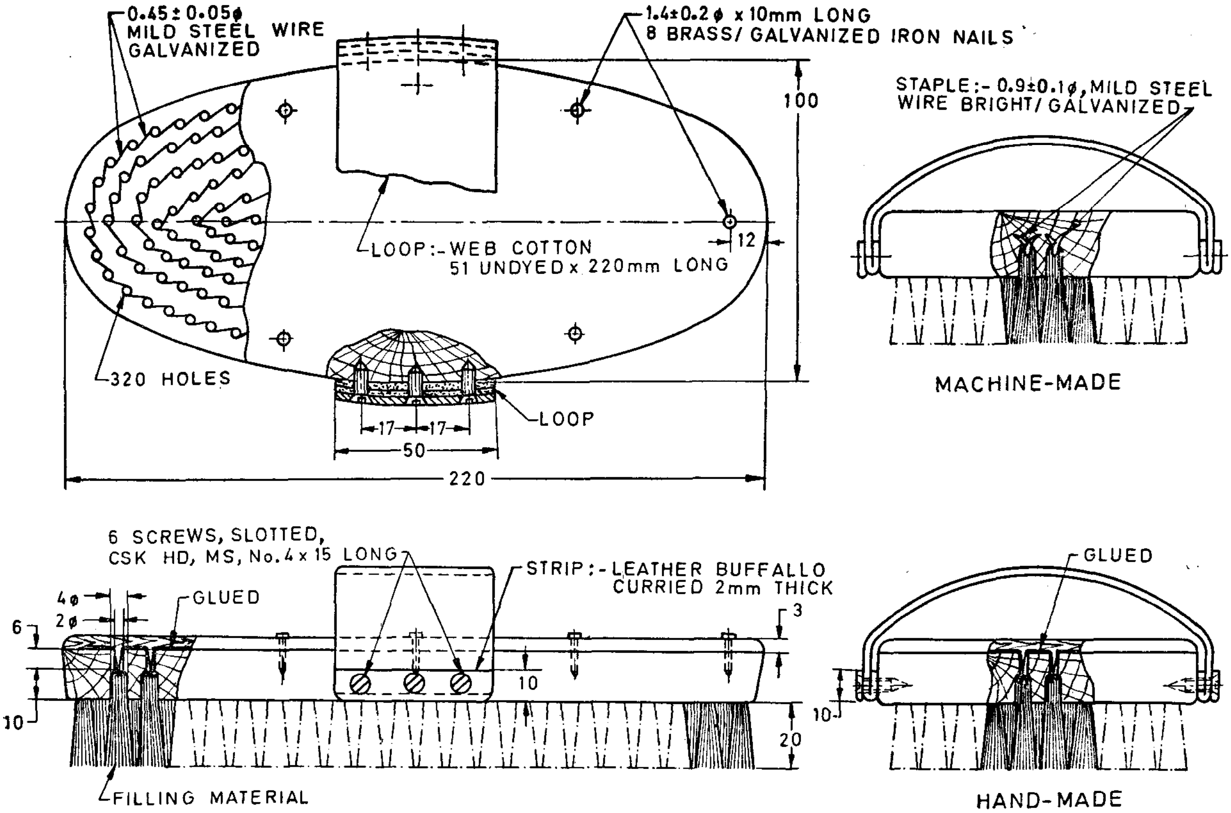
*Specification for slotted countersunk head wood screws.

†Specification for cotton webbing for personal web equipment.

‡Specification for sole leather : Part II Water-resistant vegetable tanned sole leather (*second revision*).

§Specification for animal glue for general wood-working purposes (*first revision*).



All dimensions in millimetres.

FIG. 1 BRUSH, HORSE

4.3 Dimensions and Tolerances

4.3.1 *Dimensions* — The brushes shall conform to the dimensions given in Fig. 1.

4.3.2 *Tolerances* — The tolerances on the linear dimensions (*see also* **4.3.2.2**) shall be as follows:

Dimension	*Tolerance*
mm	mm
Up to 15	± 1·0
Over 15 but below 40	± 2·0
40 and above	± 3·0

4.3.2.1 A tolerance of ±0·5 mm shall be allowed on the diameters of tuft holes.

4.3.2.2 The tolerance specified in **4.3.2** shall not apply to filling material for which minimum lengths have been prescribed (*see* Fig. 1).

4.4 Workmanship and Finish

4.4.1 The wooden portion of the brush shall be finished smooth all over and shall be properly varnished or lacquered.

4.4.2 In general workmanship and finish, the brush shall match the approved sample.

4.5 Pull Test — The tufts of the filling material shall not come out when subjected to a straight pull with thumb and finger grip.

4.6 Length of the Filling Material — The total length of 95 percent of the filling material used, when tested by pulling out ten tufts from the finished brush, shall be not less than 60 mm.

4.7 Mass of Filling Material for Finished Brush — Unfasten the tufts by removal of galvanized iron wire or staples. Determine the total mass of the filling materials.

4.7.1 The total mass of the filling material per finished brush shall be 85 and 75 g for Type 1 and Type 2 respectively. A tolerance of ± 5 percent shall be allowed on the mass of the filling material.

4.8 Identification of Filling Material — In case of dispute regarding the identity of the filling material of Type 2 brushes, microscopic examination of the cross sections of the filling material and comparison against Fig. 4 of IS : 1844-1975* shall be resorted to.

4.9 Knock Back Test for Wire-Drawn Brushes — Knock the brush at the back and ascertain that the knots are not entering into the tuft holes and the working surface is not uneven.

5. MARKING

5.1 Unless otherwise agreed to between the indentor or inspection authorities and the supplier, each brush shall be legibly and indelibly marked or stamped with the manufacturer's name or recognized trade mark, if any; the year of manufacture; and the type of the brush.

5.1.1 The brushes may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 The brushes shall be wrapped in polythene or butter paper and then packed in card board boxes or as agreed to between the purchaser and the supplier.

7. SAMPLING

7.1 The method of drawing representative sample of the brushes and the criteria for conformity shall be as prescribed in Appendix C.

8. SHELF LIFE

8.1 The brushes shall have a minimum shelf life of one year, from the date of manufacture, provided proper storage conditions are ensured and adequate precautions are taken for preserving them as given under item 4 of IS : 3451 (Part II)-1979†.

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*Specification for bristles (*first revision*).

†Code of practice for care and maintenance of brushes: Part II Brushes other than pan-set brushes.

APPENDIX A

(*Clause* 4.1.2.1)

SPECIES OF TIMBER FOR MANUFACTURE OF WOODEN PORTION OF BRUSHES, HORSE

Trade Name		*Botanical Origin*
Roman	Devanagri	
aam (mango)	आम	*Mangifera indica* Linn., fam. Anacardiaceae
aini	ऐनी	*Artocarpus hirsuta* Lamk., fam. Moraceae
banati	बनाती	*Lophopetalum wightianum* Arn., fam. Celastraceae
bijasal	बीजसाल	*Pterocarpus marsupium* Roxb., fam. Leguminosae
champak	चम्पक	*Michelia champaca* Linn., fam. Magnoliaceae
chickrassi	चिकरासी	*Chukrasia tabularis* A. Juss., fam. Meliaceae
dhaman	धामन	*Grewia tilifiolia* Vahl., fam. Tiliaceae
gamari (gumhar)	गमारी (गुम्हार)	*Gmelina arborea* Linn., fam. Verbenaceae
kaldu	कल्डु	*Adina cordifolia* Hook. f., fam. Rubiaceae
kaim	कैम	*Mitragyna parvifolia* Roxb. Korth. syn. *Stephegyne parvifolia* Korth., fam. Rubiaceae
kanju	कांजू	*Holoptelea integrifolia* Roxb. Planch., fam. Ulmaceae
kathal	कटहल	*Artocarpus heterophyllus* Lamk., syn. A. *integrifolius* Auct., fam. Moraceae
kuthan	कुथन	*Hymenodictyon excelsum* Wall., fam. Rubiaceae
lambapatti	लम्बापत्ति	*Planchonella longipetiolatum* H. J. Lam., syn. *Sideroxylon longipetiolatum* King & Prain, fam., Sapotaceae
nim-chameli	नीम-चमेली	*Millingtonia hortensis* Linn. f., fam. Bignoniaceae

Trade Name		*Botanical Origin*
Roman	Devanagri	
kodapalai	कोडपलाई	*Kingiodendron pinnatum* Harms., syn. *Hardwickia pinnata* Roxb., fam. Leguminosae
choupaini (piney)	चौपैनी (पिनी)	
toon	तून	*Toona ciliata* Roem., syn. *Cedrela* toona Roxb., fam. Meliaceae
sisoo	सिसू	*Dalbergia sisoo*

APPENDIX B

(*Clause* 4.1.2.2)

DETERMINATION OF MOISTURE CONTENT FOR TIMBER USED IN BRUSHES, HORSE

B-1. TEST SPECIMEN

B-1.1 The entire block used in brushes, horse may form the test specimen for determination of moisture content or a coupon cut from the test specimen may, as well, be used for moisture content determination. When for any reason additional determination of moisture content is required, separate sample shall be prepared from the sample material as is used in preparing the test specimens Smaller specimens may be used when deemed necessary. The test shall be carried out immediately after cutting the specimens.

B-2. PROCEDURE

B-2.1 Weigh accurately each test specimen. This specimen shall then be dried in a ventilated oven at a temperature of 105 ± 2°C until the mass becomes constant between two successive weighings made at an interval of not less than an hour.

B-3. CALCULATION

B-3.1 The moisture content, expressed as a percentage by mass of the oven-dry material is given by the formula:

$$\frac{M_1 - M_0}{M_0} \times 100$$

where

M_1 = initial mass in g of the test specimen, and

M_0 = oven dry mass in g of the test specimen.

APPENDIX C

(*Clause* 7.1)

SAMPLING AND CRITERIA FOR CONFORMITY

C-1. SCALE OF SAMPLING

C-1.1 All the brushes of same size, same type, similar dimensions and manufactured from the same type of material shall be divided into groups of 1 000 brushes and each such group shall constitute a lot. Care shall be taken to ensure that brushes included in the lot do not differ in construction, as far as possible.

C-1.2 For ascertaining the conformity of the brushes to the requirements of the specification, samples shall be tested from each lot separately.

C-1.3 The number of brushes to be sampled from a lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

TABLE 1 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

NUMBER OF BRUSHES IN THE LOT (1)	NO. OF BRUSHES TO BE SELECTED (2)	PERMISSIBLE NUMBER OF DEFECTIVE BRUSHES (3)
Upto 25	3	0
26 to 100	5	0
101 ,, 300	7	0
301 ,, 500	9	0
501 ,, 1 000	13	1

C-1.3.1 These brushes shall be selected at random from the top, middle and bottom of a box. If the brushes in a lot are packed in more than one box, at least 20 percent of the boxes subject to a minimum of 2 shall be selected and approximately equal number of brushes shall be taken from each box so as to constitute the required sample size given in col 2 of Table 1. In order to ensure the randomness of selection, procedures given in IS : 4905-1968* may be followed.

C-1.4 Number of Tests and Criteria for Conformity

C-1.4.1 All the brushes selected according to **C-1.3** shall be examined for constructional requirements given in **4** and Fig. 1. Any brush not conforming to any of these requirements shall be considered as defective.

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*Methods for random sampling.

C-1.4.1.1 The lot shall be declared as conforming to these requirements if the number of defective brushes found in the sample is less than or equal to the permissible number of defectives given in col 3 of Table 1.

C-1.4.2 The lot having been found satisfactory according to **C-1.4.1** shall be further subjected to pull test, length of filling material and mass of filling material per finished brush. For this purpose three brushes shall be selected from a lot containing 500 or less brushes and six brushes from a lot containing more than 500 brushes. These brushes, may, however be taken from those already examined and found satisfactory according to **C-1.4.1**. Each of these brushes shall be first subjected to pull test, then length of filling material and then mass of filling material per finished brush, according to **4.5.1**, **4.5.2** and **4.5.3** respectively.

C-1.4.2.1 The lot shall be deemed to have satisfied the requirements for these tests if no failure occurs under **C-1.4.2**; otherwise not.

C-1.4.3 The lot shall be declared as conforming to the requirements of this specification if **C-1.4.1** and **C-1.4.2** are satisfied.